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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/020,384	12/06/2001	Gary F. Feierbach	04860P2679	2221

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EXAMINER	
DATSKOVSKIY, MICHAEL V	

ART UNIT	PAPER NUMBER
2835	

DATE MAILED: 03/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/020,384	FEIERBACH, GARY F.	
	Examiner	Art Unit	
	Michael V. Datskovskiy	2835	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 February 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,7,9-13,15-23,25-29,31-35,42,43,45 and 46* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,7,9-13,15-23,25-29,31-35,42,43,45 and 46* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 February 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 02/21/2006 have been fully considered but regarding the objection of the drawings under 37 CFR 1.83 (a) and claim rejection under 35 USC § 112, first paragraph, they are not persuasive: According to applicant's arguments, flexible channels 803A shown in Figs. 8A and 8B represent claimed in claims 42, 43, 45-46 "means for positioning said electronic device proximate a conduit having a flexible channel attached thereto". Examiner does not agree, and points out that: first: said "means" is claimed "for positioning said electronic device proximate a conduit", and not proximate a flexible channel attached to said conduit; second: said flexible channel is claimed as being a part of the claimed structure along with said "means", and not as such "means' itself. Therefore, the previous objection of the drawings under 37 CFR 1.83 (a) and claim rejection under 35 USC § 112, first paragraph, stays.

2. Applicant's arguments, see, filed 02/21/2006, with respect to the rejection(s) of claim(s) 1-3, 7, 10-11, 16, 18-19, 21-23, 29, 31, 42, 45 (claims 42 and 45 as best understood by examiner) under 35 U.S.C. 102(b) as being anticipated by Yamamoto et al (US Patent 4,729,060); claims 1 and 4, 9, 17, 27-28, 43 under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al; claims 4, 9, 17, 27-28, 43 under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al and further in view of Grunfeld (US Patent 5,847,366); and claims 32-35 under 35 U.S.C. 103(a) as being unpatentable over Novotny as applied to claims 1 and 32 above, and further in view of Hisano et al

have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Downing (US Patent 4,910,642, previously cited).

Drawings

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, " the means for positioning said electronic or electrical device proximate a conduit having a flexible channel attached thereto" (claim 42, and 43, 45-46 as dependent on claim 42) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the examiner does not accept the changes, the applicant will be notified and informed of

any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 32-35, 42-43, 45-46 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Regarding to claims 32-35: An embodiment of the proposed invention comprising a heat pipe is shown in Fig. 9, and described in the amended paragraph [0056]. According to the disclosure, each of the conduit 902 and flexible channels 903A and 903B is sealed at both ends. There is no open end in each of the flexible channels. Claims 32-35 are dependent on claim 1, which claims said flexible channel as having an open end and being capable to alternate between a compressed and an extended position. Therefore, claims 32-35 are contradictive to their parent claim 1, and claim a non-described and non-operating structure.

Regarding to claims 42, 43, 45-46: Nowhere in the specification or in the drawing applicant provided support for the structural limitation: " the means for positioning said

electronic or electrical device proximate a conduit having a flexible channel attached thereto" (claim 42 and dependent claims 43, 45-46).

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-2, 5, 11-12, 15-16, 18-22, 25, 42, 45 (claims 42, 45 as best understood by examiner) are rejected under 35 U.S.C. 102(b) as being anticipated by Downing. Downing teaches a cooling device 10, Figs. 1-2, for removing heat from an integrated circuit, said cooling device comprising: a conduit 11, a flexible channel 17 to alternate between a compressed position and an extended position (col. 3, lines 15-37, and col. 4, lines 55-68), and having a first open end and a second closed end, said first open end coupled with said conduit 11, said open end having an internal width, said flexible channel 17 comprised of a resilient material having spring-like characteristics, said material to provide a spring-like restoring force when compressed, the second closed end comprising a thermally conductive material 23 attached to said flexible channel 17, said thermally conductive material 23 having a substantially planar surface to interface directly with said integrated circuit when said flexible channel is extended and to detach from said integrated circuit in said compressed position; an interconnect mechanism between said conduit and said flexible channel to allow a fluid introduced within said conduit to move between said conduit and said flexible channel 17, and a heat sink (18,

19, 21) attached to an interior surface 28 of said closed end to cause heat absorbed by said closed end to be conducted through said conduit 11 and said flexible channel 17. Downing teaches furthermore) said cooling device as in Claim 1, wherein said interconnect mechanism is an opening 22 in a surface of said conduit 11, wherein said flexible channel 17, including said closed end 23, is sealed, and further comprising ports 12 for coupling to a pump coupled to said conduit 11 configured to reduce a pressure in said conduit and said flexible channel to compress said flexible channel and to remove said conductive material from said integrated circuit (col. 3, lines 15-37, and col. 4, lines 55-68). Although the device by Downing is a cooler, it is inherent that a cooled fluid is getting heated after contacting a heat sink and a thermally conductive end 23.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 4, 7, 9-10, 13, 17, 26-28, 43, 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Downing.

Downing teaches all the limitations of the claims except certain types of materials used to couple said flexible channel to said conduit (claim 4), or to make said flexible channel (claims 7, 9-10); and certain ranges of the cooling fluid pressure to manipulate expanding of said flexible channel (claims 13, 17, 26-28, 43 and 46). It would have been obvious to one having ordinary skill in the art at the time the invention was made to

make said closed end heat sink and said flexible channel from such claimed materials, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice, (*In re Leshin*, 125 USPQ 416), and also it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

10. Claims 32-35 as best understood by examiner are rejected under 35 U.S.C. 103(a) as being unpatentable over Downing as applied to claim 1 above, and further in view of Hisano et al.

Downing teaches all the limitations of the claims except said conduit as a heat pipe comprising a wicking material. Hisano et al teach a cooling device, Fig. 29, for removing heat from an integral circuit 1 (IC), said cooling device comprising: a conduit 81b; a sealed flexible channel 81a having a first open end and a second thermally conductive closed end 82, said flexible channel is made of a resilient material, said second end thermally conductive material having a substantially planar surface to interface directly with said IC 1; an interconnect openings between said flexible channel and said conduit to allow a fluid to move between said conduit and said flexible channel 81a; wherein said conduit 81b is a heat pipe comprising a wicking material (col.18, lines 19-22). It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ a heat pipe comprising a wicking material, as Hisano et al show it, in the device by Downing in order to enhance heat dissipation.

11. Claims 1-3, 7, 10-11, 16, 18-19, 21-23, 29, 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al in view of Downing. Yamamoto et al teach a cooling device 10, Figs.1, 11, for removing heat from an integral circuit (IC) 7, said cooling device comprising: a conduit 1; a sealed flexible channel 5 having a first open end and a second thermally conductive closed end 3, said flexible channel is made of a resilient material having spring-like characteristics and providing a spring-like restoring force when compressed, said second end thermally conductive material (copper) having a substantially planar surface to interface directly with said IC 7; an interconnect openings between said flexible channel and said conduit to allow a fluid to move between said conduit and said flexible channel; and a port for coupling to a pump 25 coupled to said conduit 1. Yamamoto et al teach furthermore a heat sink 75 having plurality of flow diverters –a plurality of spaced apart planar fins 77, said heat sink being attached to an interior surface of said closed end 3 to conduct heat absorbed by said closed end through said heat sink to said cooling fluid contained within said conduit 1 and said flexible channel 5. Yamamoto et al teach furthermore said resilient material could be pleated (col. 4, line 44). Yamamoto et al do not teach said flexible channel alternates between a compressed position and an extended position. Downing teaches a cooling device 10, Figs. 1-2, for removing heat from an integrated circuit, said cooling device comprising: a conduit 11, a flexible channel 17 to alternate between a compressed position and an extended position (col. 3, lines 15-37, and col. 4, lines 55-68), and having a first open end and a second closed end, said first open end coupled with said conduit 11, said open end having an internal width, said flexible

channel 17 comprised of a resilient material having spring-like characteristics, said material to provide a spring-like restoring force when compressed, the second closed end comprising a thermally conductive material 23 attached to said flexible channel 17, said thermally conductive material 23 having a substantially planar surface to interface directly with said integrated circuit when said flexible channel is extended and to detach from said integrated circuit in said compressed position; an interconnect mechanism between said conduit and said flexible channel to allow a fluid introduced within said conduit to move between said conduit and said flexible channel 17, and a heat sink (18, 19, 21) attached to an interior surface 28 of said closed end to cause heat absorbed by said closed end to be conducted through said conduit 11 and said flexible channel 17. Downing teaches furthermore) said cooling device as in Claim 1, wherein said interconnect mechanism is an opening 22 in a surface of said conduit 11, wherein said flexible channel 17, including said closed end 23, is sealed, and further comprising ports 12 for coupling to a pump coupled to said conduit 11 configured to reduce a pressure in said conduit and said flexible channel to compress said flexible channel and to remove said conductive material from said integrated circuit (col. 3, lines 15-37, and col. 4, lines 55-68). It would have been obvious to one ordinary skilled in the art at the time invention was maid to manipulate the pressure of a coolant in the device by Yamamoto et al as it is disclosed in the device by Downing, in order to facilitate removal or installation of heat generating electronic components being cooled.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael V. Datskovskiy whose telephone number is (571) 272-2040. The examiner can normally be reached on 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn Feild can be reached on (571) 272-2092. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael V Datskovskiy
Primary Examiner
Art Unit 2835

02/22/2006